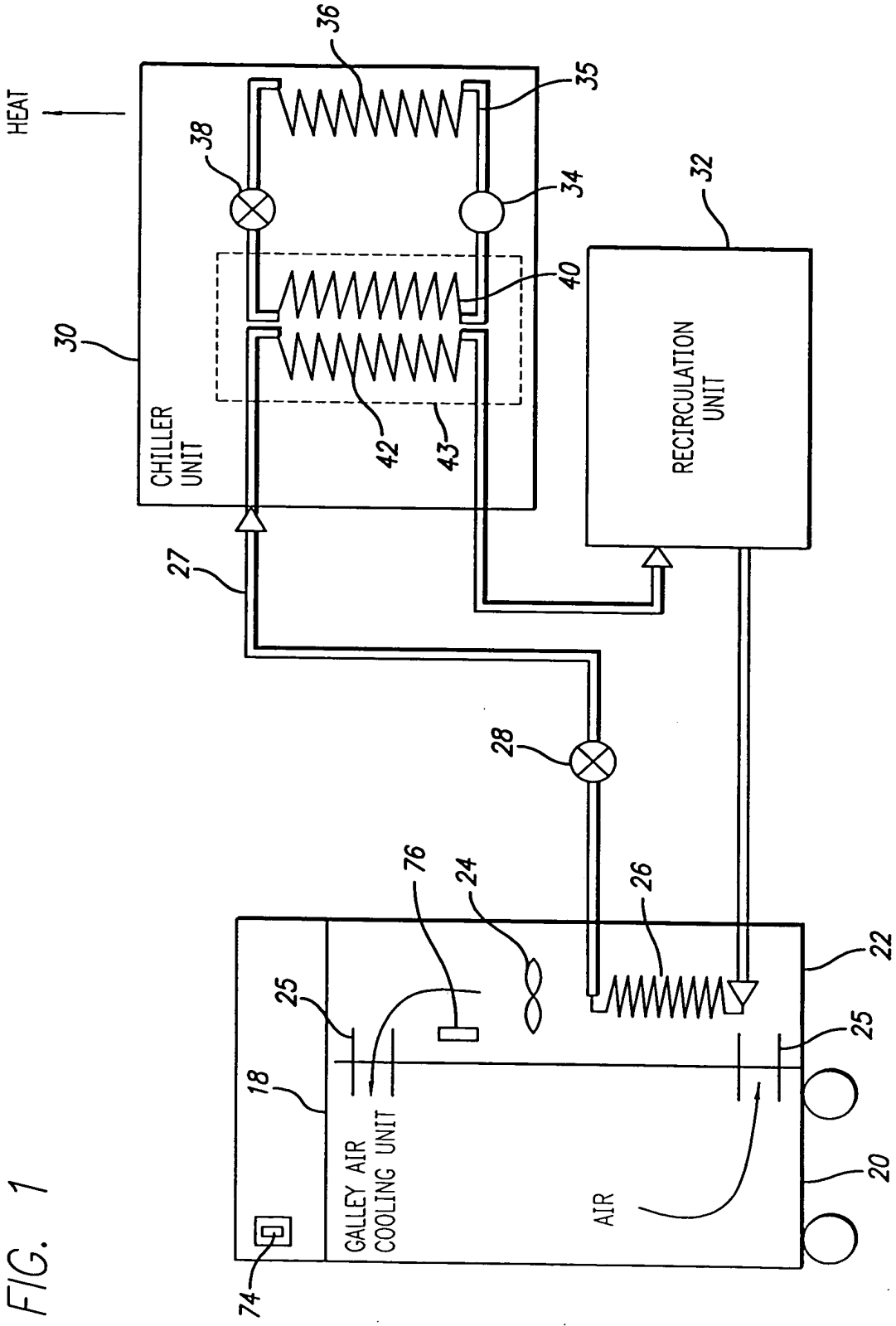

HEAT
36
35
38
34
32
40
30
CHILLER UNIT
42
43
RECIRCULATION UNIT
27
28
76
24
26
22
25
25
18
GALLEY AIR COOLING UNIT
AIR
20
74

FIG. 1

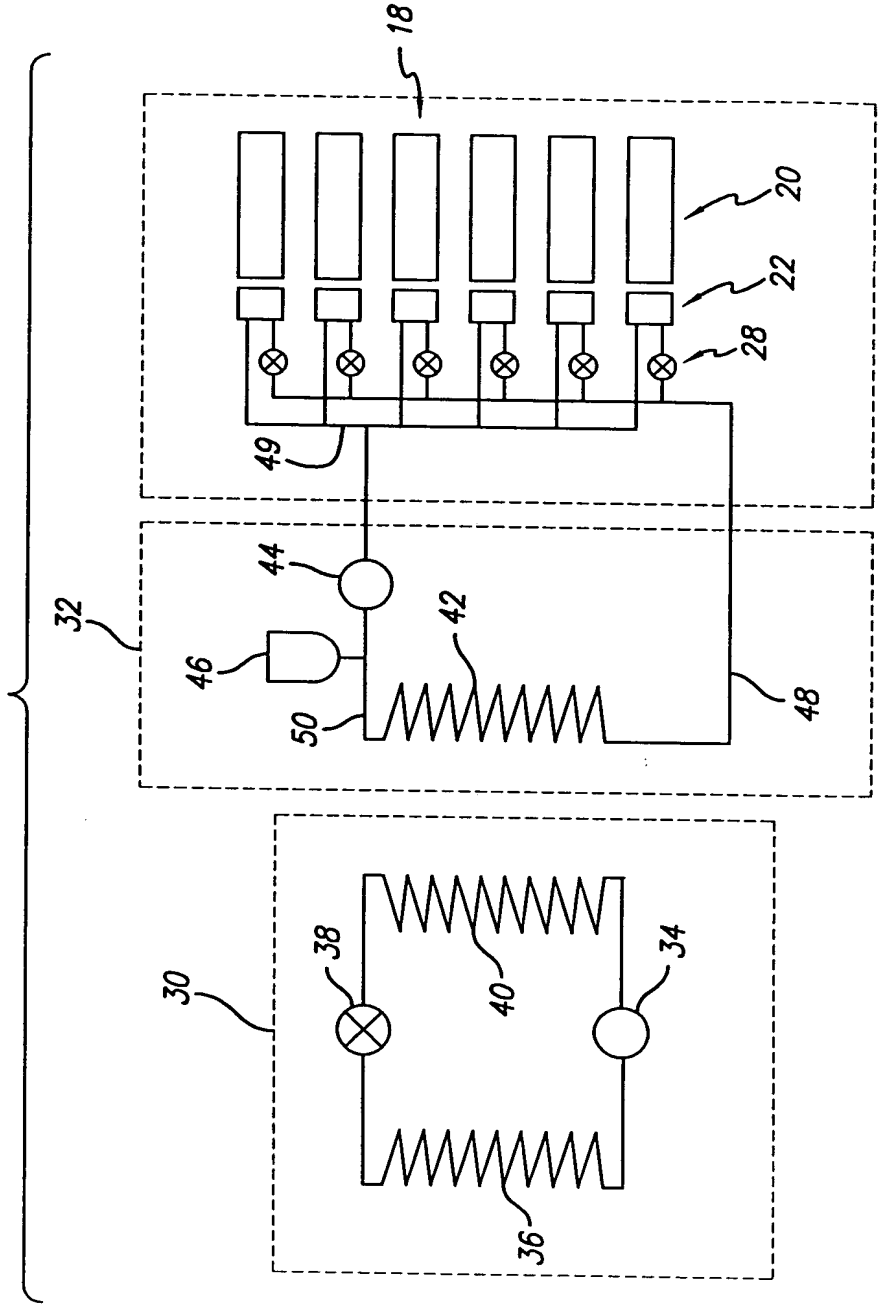
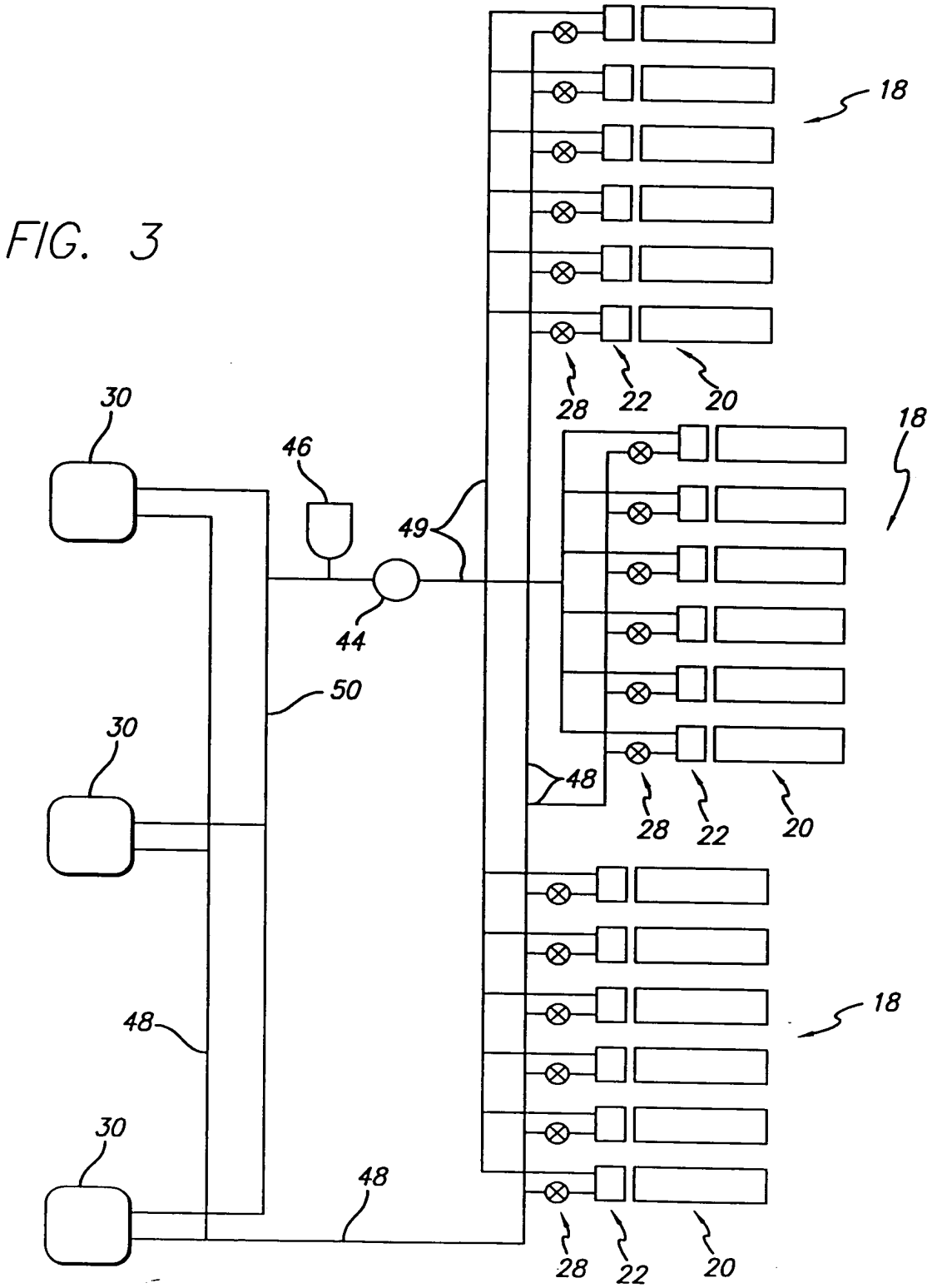


FIG. 2

FIG. 3


18
18
18
30
30
30
46
49
44
50
48
48
48
28
22
20
28
22
20
28
22
20
28
22
20

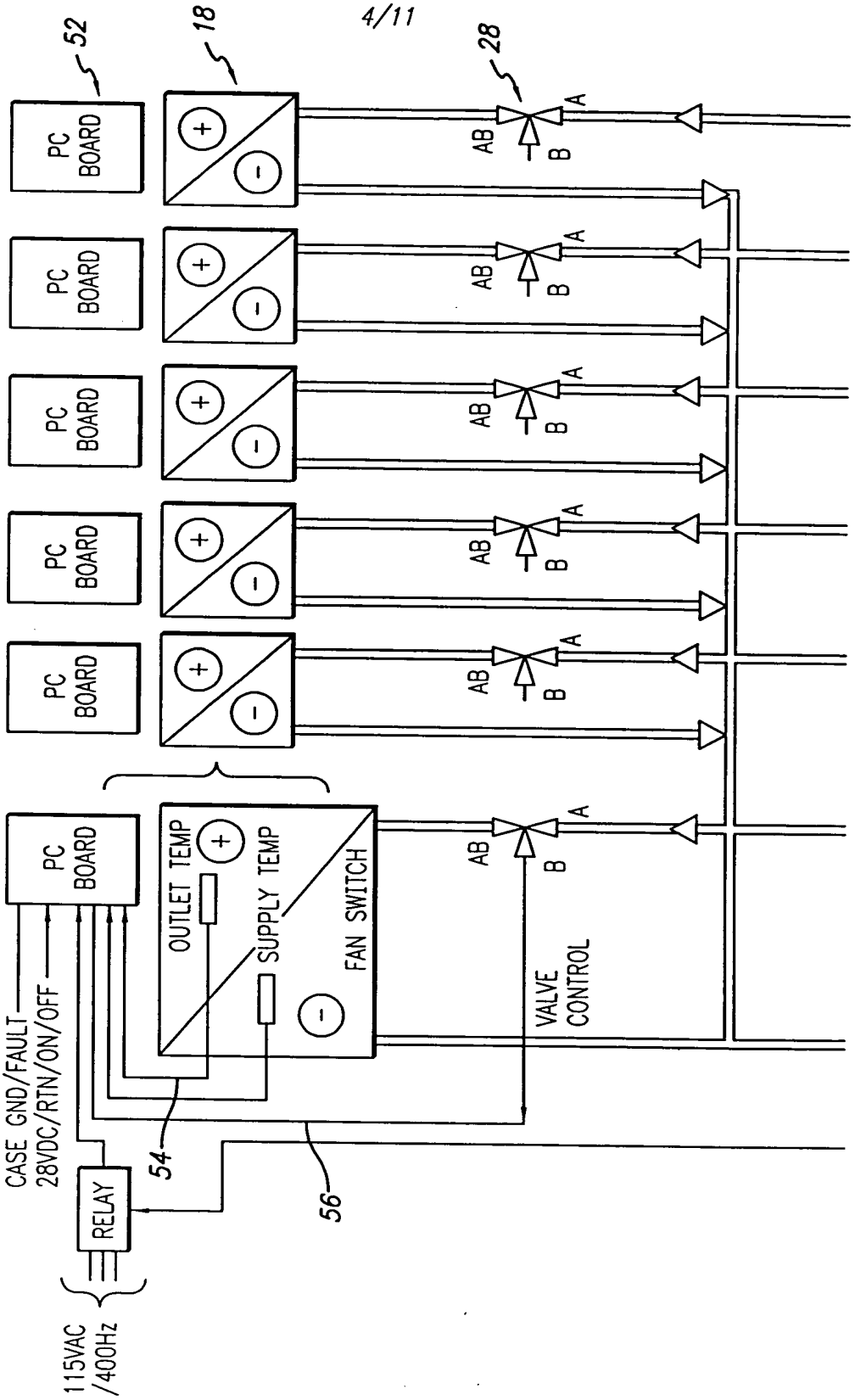

GALLEY AIR COOLER
52
18
28
PC BOARD
PC BOARD
PC BOARD
PC BOARD
PC BOARD
PC BOARD
OUTLET TEMP
SUPPLY TEMP
FAN SWITCH
AB
A
B
VALVE CONTROL
CASE GND/FAULT
28VDC/RTN/ON/OFF
RELAY
115VAC /400Hz
54
56

FIG. 4-1

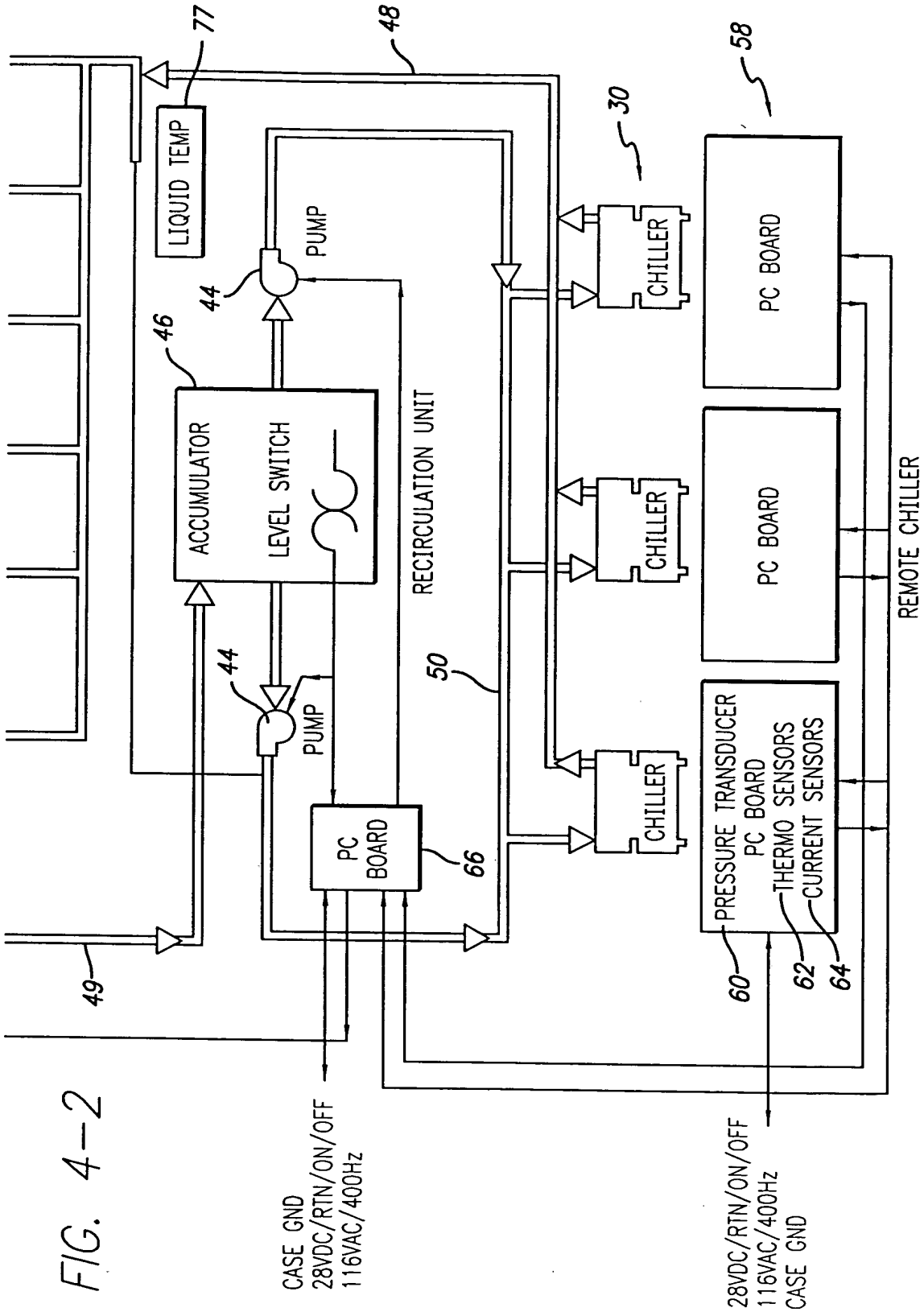

77
48
58
30
LIQUID TEMP
PUMP
44
46
ACCUMULATOR
LEVEL SWITCH
RECIRCULATION UNIT
CHILLER
PC BOARD
REMOTE CHILLER
50
PC BOARD
66
PRESSURE TRANSDUCER
PC BOARD
THERMO SENSORS
CURRENT SENSORS
60
62
64
49
CASE GND
28VDC/RTN/ON/OFF
116VAC/400Hz
28VDC/RTN/ON/OFF
116VAC/400Hz
CASE GND

FIG. 4-2

FIG. 5

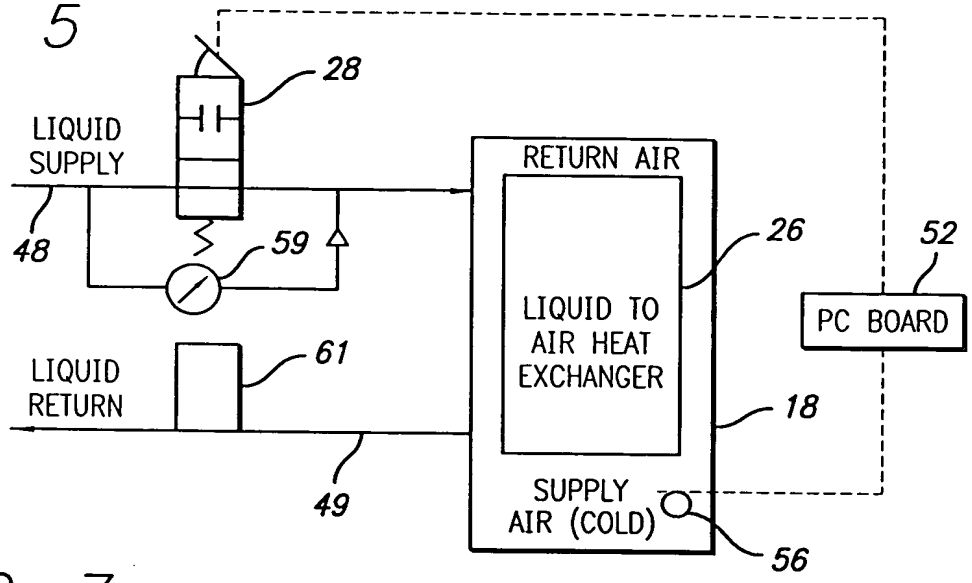
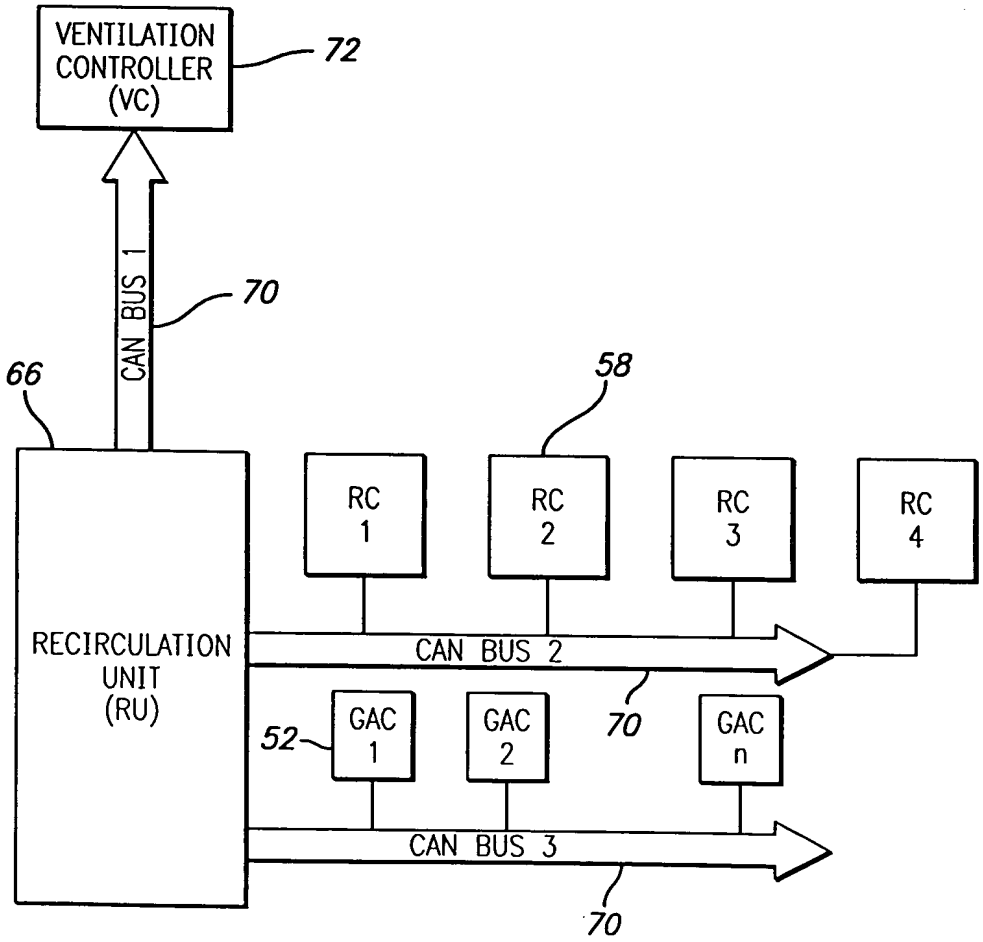

28
LIQUID SUPPLY
48
59
RETURN AIR
26
52
LIQUID TO AIR HEAT EXCHANGER
PC BOARD
61
LIQUID RETURN
18
49
SUPPLY AIR (COLD)
56

FIG. 7


VENTILATION CONTROLLER (VC)
72
CAN BUS 1
70
66
58
RC 1
RC 2
RC 3
RC 4
RECIRCULATION UNIT (RU)
CAN BUS 2
70
52
GAC 1
GAC 2
GAC n
CAN BUS 3
70

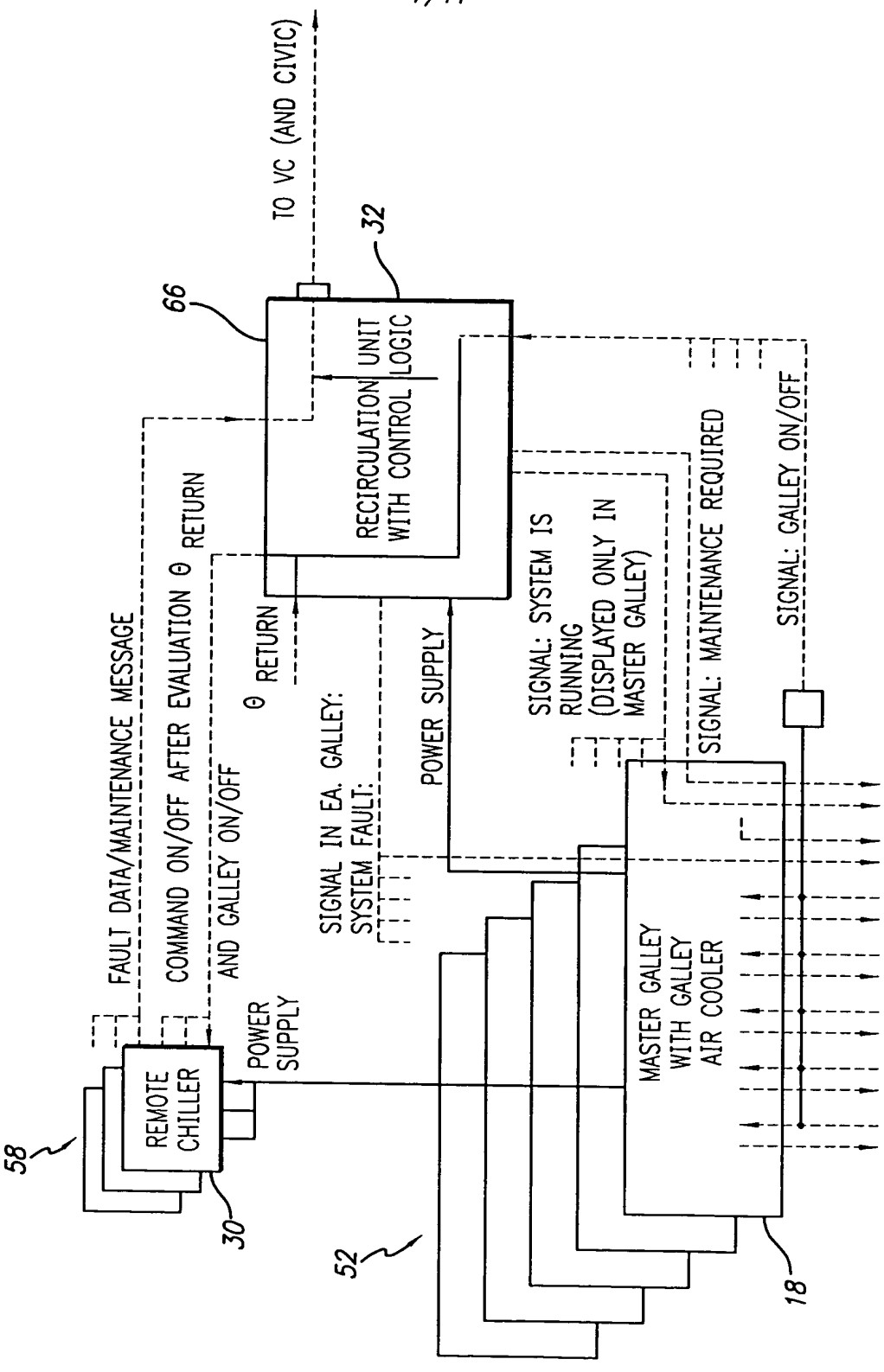

TO VC (AND CIVIC)
32
66
RECIRCULATION UNIT WITH CONTROL LOGIC
FAULT DATA/MAINTENANCE MESSAGE
COMMAND ON/OFF AFTER EVALUATION Θ RETURN
AND GALLEY ON/OFF
Θ RETURN
SIGNAL IN EA. GALLEY: SYSTEM FAULT:
POWER SUPPLY
SIGNAL: SYSTEM IS RUNNING (DISPLAYED ONLY IN MASTER GALLEY)
SIGNAL: MAINTENANCE REQUIRED
SIGNAL: GALLEY ON/OFF
POWER SUPPLY
REMOTE CHILLER
58
30
52
MASTER GALLEY WITH GALLEY AIR COOLER
18

FIG. 6

FIG. 8-1

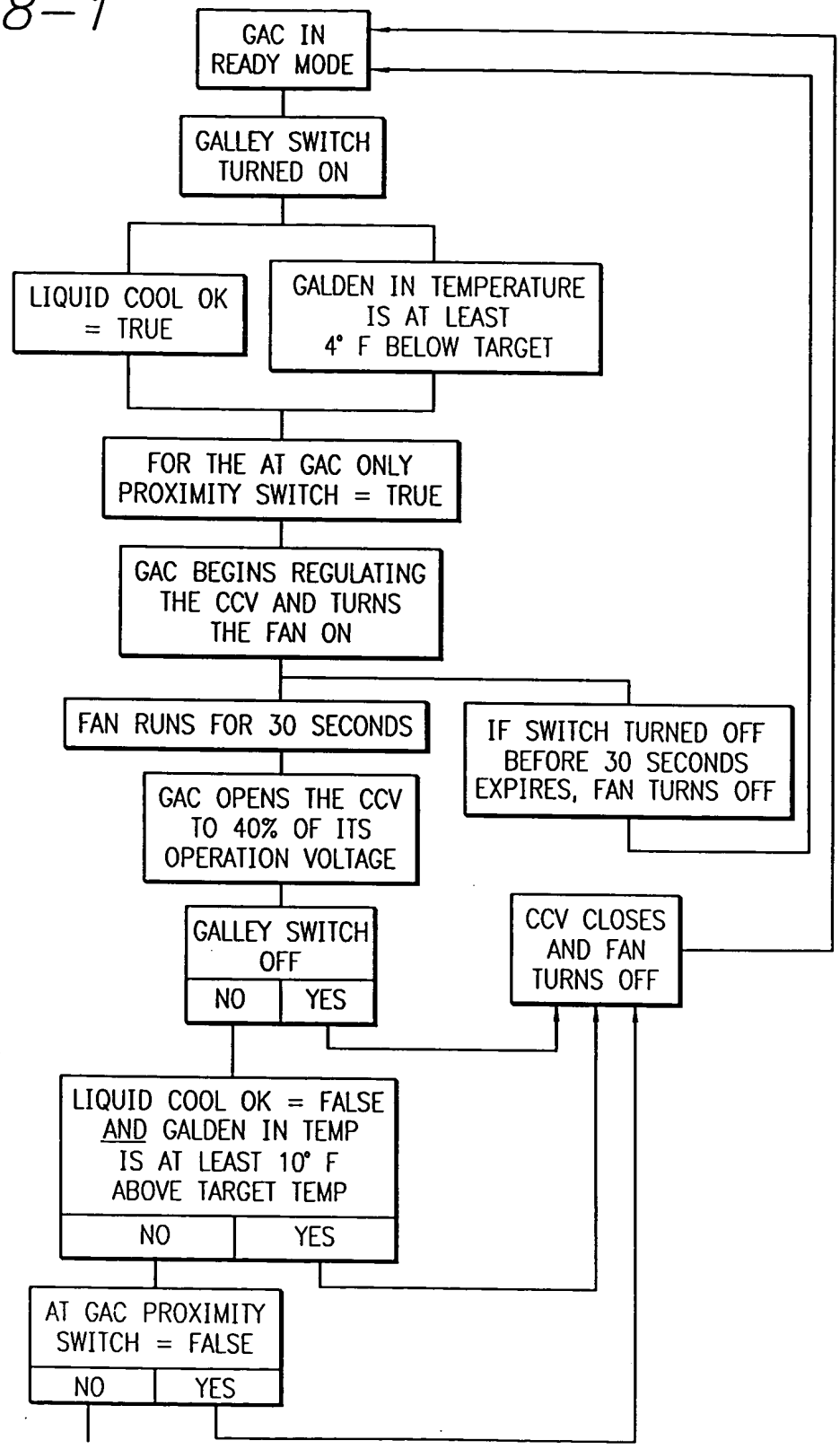

GAC IN READY MODE
GALLEY SWITCH TURNED ON
LIQUID COOL OK = TRUE
GALDEN IN TEMPERATURE IS AT LEAST 4° F BELOW TARGET
FOR THE AT GAC ONLY PROXIMITY SWITCH = TRUE
GAC BEGINS REGULATING THE CCV AND TURNS THE FAN ON
FAN RUNS FOR 30 SECONDS
IF SWITCH TURNED OFF BEFORE 30 SECONDS EXPIRES, FAN TURNS OFF
GAC OPENS THE CCV TO 40% OF ITS OPERATION VOLTAGE
GALLEY SWITCH OFF
NO
YES
CCV CLOSES AND FAN TURNS OFF
LIQUID COOL OK = FALSE AND GALDEN IN TEMP IS AT LEAST 10° F ABOVE TARGET TEMP
NO
YES
AT GAC PROXIMITY SWITCH = FALSE
NO
YES

FIG. 8-2

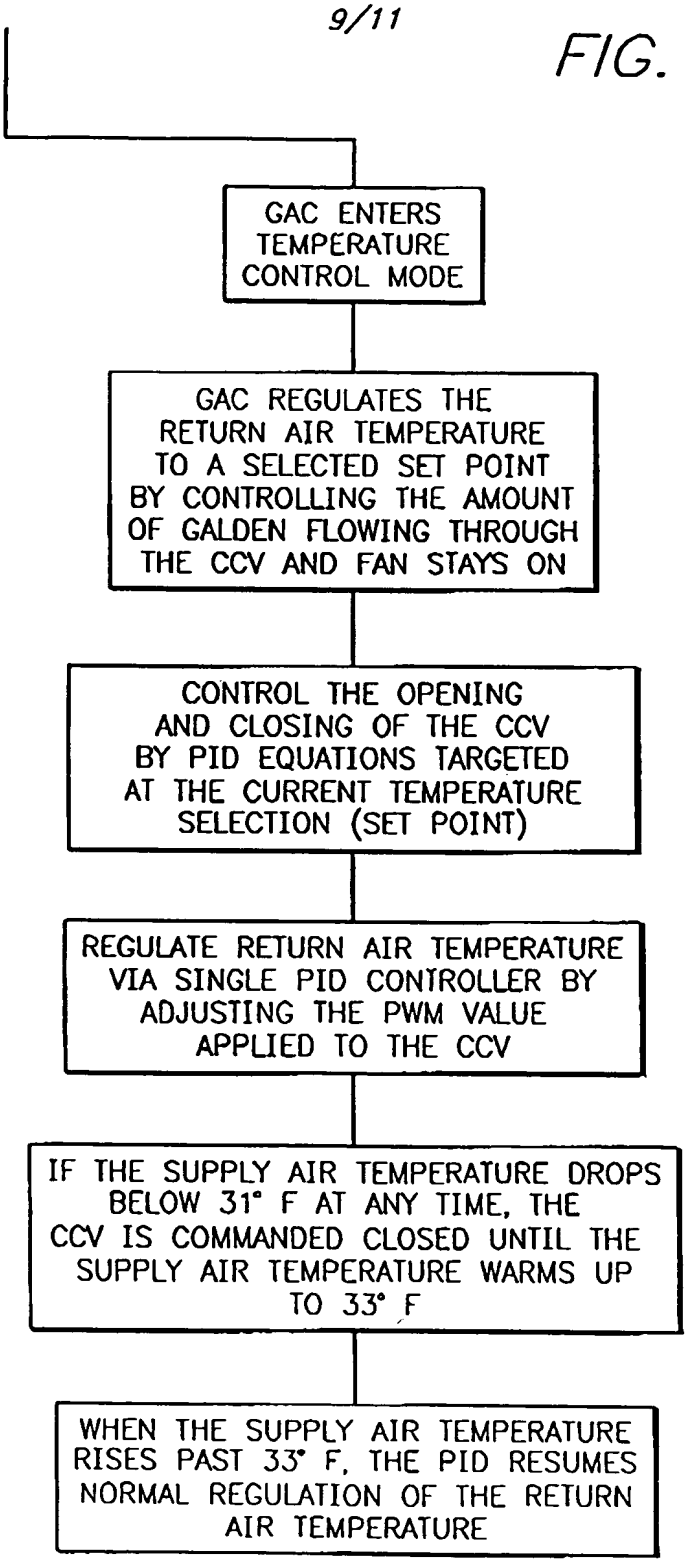

GAC ENTERS TEMPERATURE CONTROL MODE
GAC REGULATES THE RETURN AIR TEMPERATURE TO A SELECTED SET POINT BY CONTROLLING THE AMOUNT OF GALDEN FLOWING THROUGH THE CCV AND FAN STAYS ON
CONTROL THE OPENING AND CLOSING OF THE CCV BY PID EQUATIONS TARGETED AT THE CURRENT TEMPERATURE SELECTION (SET POINT)
REGULATE RETURN AIR TEMPERATURE VIA SINGLE PID CONTROLLER BY ADJUSTING THE PWM VALUE APPLIED TO THE CCV
IF THE SUPPLY AIR TEMPERATURE DROPS BELOW 31° F AT ANY TIME, THE CCV IS COMMANDED CLOSED UNTIL THE SUPPLY AIR TEMPERATURE WARMS UP TO 33° F
WHEN THE SUPPLY AIR TEMPERATURE RISES PAST 33° F, THE PID RESUMES NORMAL REGULATION OF THE RETURN AIR TEMPERATURE

FIG. 9

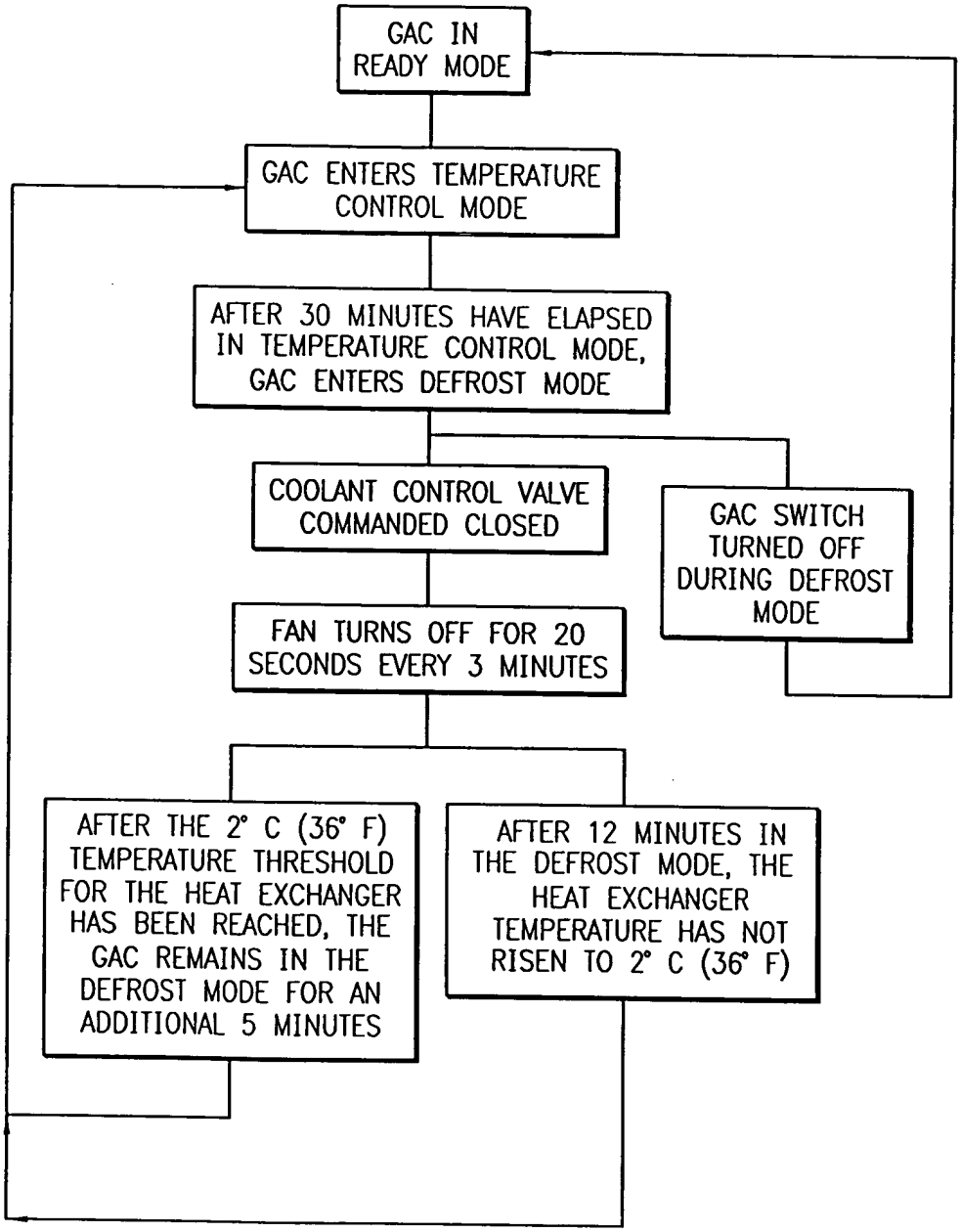
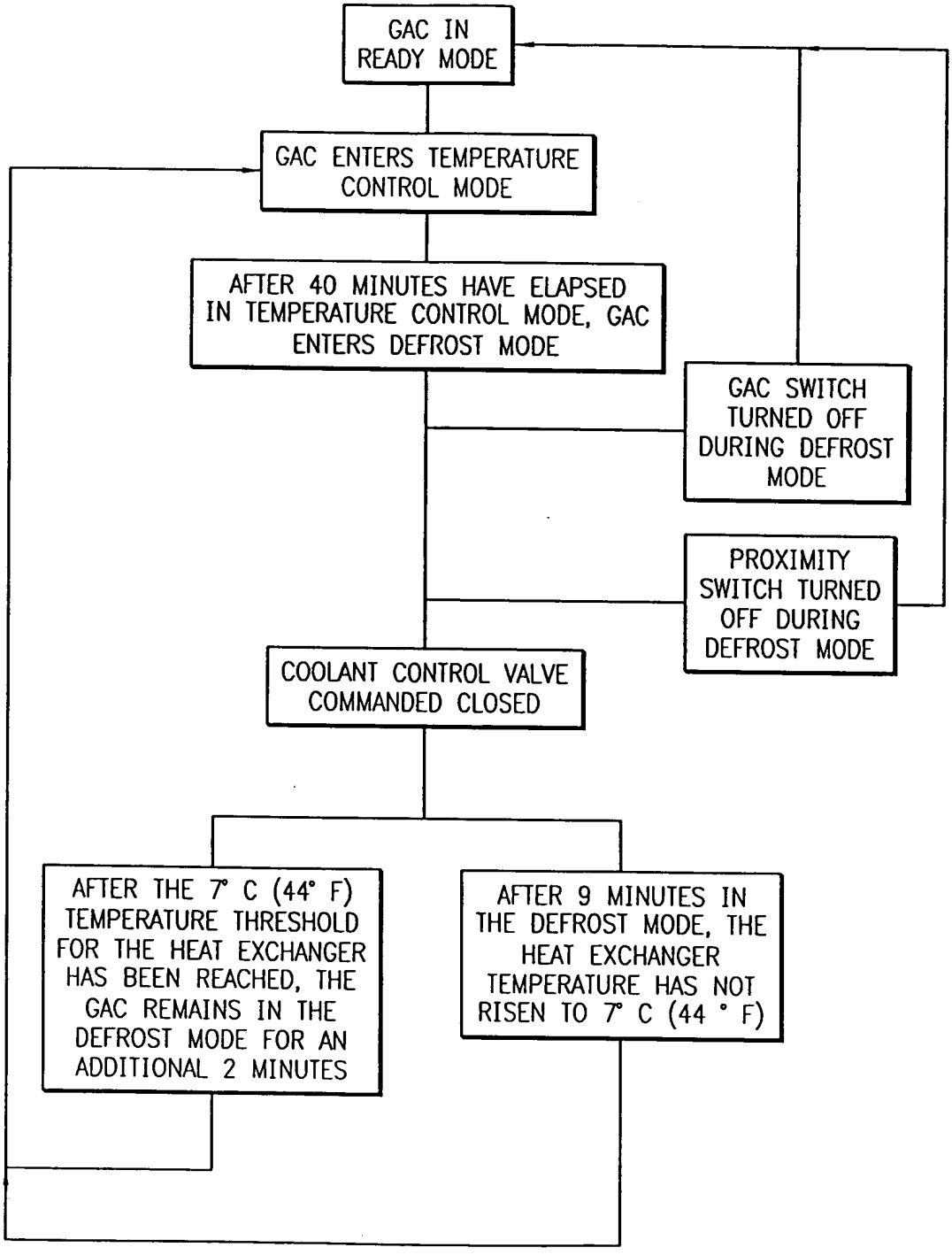

GAC IN READY MODE
GAC ENTERS TEMPERATURE CONTROL MODE
AFTER 30 MINUTES HAVE ELAPSED IN TEMPERATURE CONTROL MODE, GAC ENTERS DEFROST MODE
COOLANT CONTROL VALVE COMMANDED CLOSED
GAC SWITCH TURNED OFF DURING DEFROST MODE
FAN TURNS OFF FOR 20 SECONDS EVERY 3 MINUTES
AFTER THE 2° C (36° F) TEMPERATURE THRESHOLD FOR THE HEAT EXCHANGER HAS BEEN REACHED, THE GAC REMAINS IN THE DEFROST MODE FOR AN ADDITIONAL 5 MINUTES
AFTER 12 MINUTES IN THE DEFROST MODE, THE HEAT EXCHANGER TEMPERATURE HAS NOT RISEN TO 2° C (36° F)

FIG. 10


GAC IN READY MODE
GAC ENTERS TEMPERATURE CONTROL MODE
AFTER 40 MINUTES HAVE ELAPSED IN TEMPERATURE CONTROL MODE, GAC ENTERS DEFROST MODE
GAC SWITCH TURNED OFF DURING DEFROST MODE
PROXIMITY SWITCH TURNED OFF DURING DEFROST MODE
COOLANT CONTROL VALVE COMMANDED CLOSED
AFTER THE 7° C (44° F) TEMPERATURE THRESHOLD FOR THE HEAT EXCHANGER HAS BEEN REACHED, THE GAC REMAINS IN THE DEFROST MODE FOR AN ADDITIONAL 2 MINUTES
AFTER 9 MINUTES IN THE DEFROST MODE, THE HEAT EXCHANGER TEMPERATURE HAS NOT RISEN TO 7° C (44 ° F)